Integrating Asset Management Systems

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Simplified Overview of Asset Management in DDOT's Infrastructure Project Management Administration (IPMA)

Existing DDOT IPMA Asset Management Systems

❑ District-Wide
- HPMS - Highway Performance Monitoring System
- PROTRACK – Project Tracking System
- SIS - Street Inventory System
- PMS - Pavement Management System
- PONTIS - Bridges
- TMS - Tunnel Management System
- HANSEN – District-Wide Citizen Service Request System

Plus various other asset management systems in other DDOT administrations

❑ National Highway System (NHS) Specific
- WEB PORTAL – Central Communications Hub
- TRACKER – Service Request and Performance Tracking System

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3

Integrated Use of District-Wide Asset Management Systems

❑ System condition is monitored by DDOT personnel, consultants, and citizens

❑ All needs identified by citizens are tracked through a single system - Hansen

❑ Minor needs are addressed immediately using in-house personnel or existing contracts

❑ Asset condition information is entered into PMS, PONTIS, SIS, and TMS -- needed actions are determined

❑ Required actions are budgeted, and if approved, are tracked through PROTRACK

❑ Overall performance is tracked at the Federal level through HPMS

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4

NHS Asset Management – Evolving Towards the Future – Through a Pilot Project for integrating all Management Systems

❑ DDOT's National Highway System assets (except traffic signals) are managed by a private contractor under a performance-based asset management contract known as DC Streets

❑ DC Streets is the first urban contract of its kind in the United States

❑ The innovative nature of the contract required specialized asset management tools to facilitate communication and the timely sharing of project information
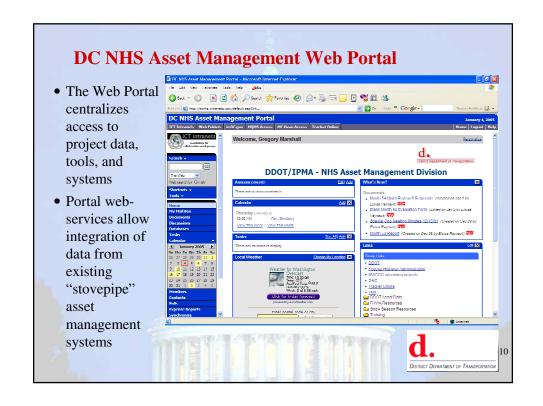

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5

Vision for Asset Management System Integration within the DC Streets Project

❑ DC Streets provides a context for exploring viable approaches for integrating asset management systems both within the agency and with external partners

❑ The 75 miles of roadway which make up the NHS provides a representative cross-section of the District's asset inventory.

❑ Systems and procedures developed to address the needs of this group of assets can potentially be scaled and adapted to serve the needs of larger sections of the City's infrastructure.

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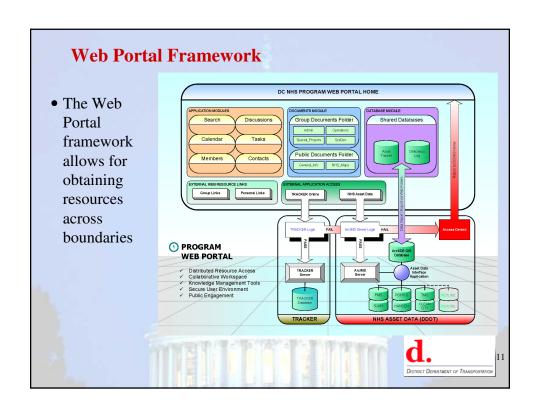DISTRICT DEPARTMENT OF TRANSPORTATION

6

The Challenge

❑ Integrating asset management systems presents unique challenges:

- Supporting coordination of maintenance activities and capital improvement among multiple agencies/entities

- Enabling the immediate exchange of relevant data among decentralized systems

- Reconciliation of policies and objectives among project partners

- Establishing mechanisms for effective communication between project partners

❑ To address these challenges an overall system architecture for asset management was developed, which supports collaboration among inter-organizational units.
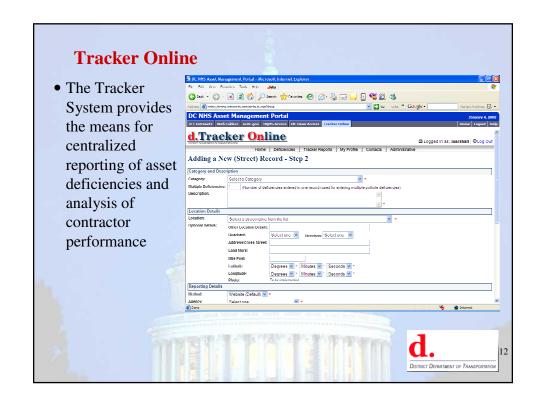
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7
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Asset Management System Environment

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8
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The Approach to Integrating Asset Management Systems for DC Streets

❑ Leverage DDOT's centralized GIS-based asset inventory

❑ Identify which data elements need to be shared among stakeholders

❑ Provide web-centric framework for access, storage, and exchange of shared data (Web Portal, Tracker)

❑ Develop data exchange protocols for efficient routing of asset information

❑ Tailor presentation of available data to suit requirements of individual project members/groups

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9

DC NHS Asset Management Web Portal

- The Web Portal centralizes access to project data, tools, and systems
- Portal web-services allow integration of data from existing "stovepipe" asset management systems

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10

5

Web Portal Framework

- The Web Portal framework allows for obtaining resources across boundaries

Tracker Online

- The Tracker System provides the means for centralized reporting of asset deficiencies and analysis of contractor performance

Lessons Learned in Integrating Asset Management Systems for DC Streets Project

❑ Integrating asset management systems across organizations is possible through the use of an intermediary, Internet-based application framework

❑ Building and integrating the tools/systems is only the first step – The best tools are not effective if no one uses and maintains them
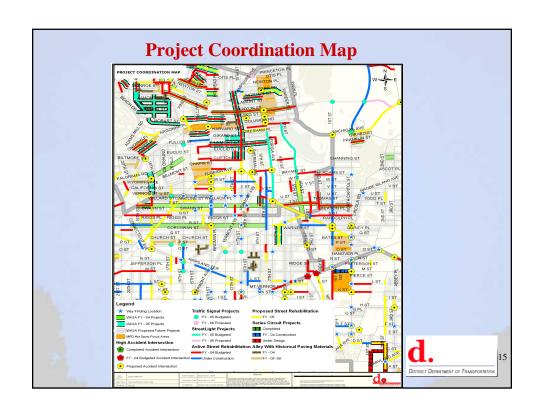
❑ Training all stakeholders on the use of the tools/integrated systems is essential

❑ Technical hurdles can generally be overcome; however cross-organization integration can only be successful when a sufficient level of trust exists between parties

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Benefits of the DC Streets Integration Approach

❑ The use of a web portal and web-services allows for:

  ▪ Presentation and communication of project data to decision makers inside and outside of the agency

  ▪ Improving or enhancing business processes for asset management and decision making

  ▪ Improving coordination of work across different business units responsible for the same assets

  ▪ Coordination with the activities of others who occupy the right-of-way, especially utility companies

  ▪ Making asset condition data characteristics, and work activity status available in a timely manner to decision-makers and external project stakeholders

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Project Coordination Map

Summary

❑ DDOT - IPMA has a number of asset management systems that are used in an integrated manner to assist in managing the condition of the City's assets

❑ The innovative DC Streets contract presented challenges for timely sharing of asset management information between partners

❑ As a result of these challenges:

- An architecture for an integrated asset management system was developed
- Two web-based tools – Tracker and the Web Portal – were developed and are currently in use

The architecture and tools are expandable and could be used across the entire DDOT transportation network.

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17